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work of life at the early age of forty-three, but in these years he has made his mark among his fellow-men. He has shown what may be accomplished by a trained mind actuated by noble impulses. He leaves a widowed mother to mourn his loss.—*Rochester Democrat and Chronicle, September 29th, 1884.*

ROBERT B. TOLLES, elected an honorary member of the Society at the Chicago meeting. He died in Boston, Mass., November 17, 1883. [Memoir at page 41.]

JOSEPH JANVIER WOODWARD, M. D.,

Surgeon and Brevet-Colonel U. S. Army.

(*Reported by J. D. Cox from the Committee appointed for the purpose.*)

The scientific world, and especially all microscopists, will be sensible of a very great loss in the death of Surgeon Joseph Janvier Woodward, Brevet-Colonel U. S. Army, who died at Dr. Livingston's private hospital for brain diseases, near Philadelphia, on the 18th of August last.

The illness of which Dr. Woodward died, dates from the death of President Garfield, upon whom the doctor was in constant attendance from the day of the murderous assault till the tragic close at Elberon. Dr. Woodward had, however, been suffering from the effects of over-work and of an accident to himself, for at least a year before he was called into attendance upon the President, and was consequently unfitted for the great strain upon his nervous system which he was then subjected to.

His great work was the Medical History of the War of the Rebellion, which he was preparing under the direction of the Surgeon-General, and of which one volume in folio had been published before his labors were interrupted. Good progress had also been made in preparing material for its completion. The surgical history had been prepared by Dr. Otis, whose death occurred some years earlier, and also, no doubt, from overwork.

In the winter of 1880-81, Dr. Woodward, being in shattered health as a result of his long-continued and arduous work, was seeking aid from horse-back exercise, when he had a leg broken by a tall of his horse upon the slippery pavement of Washington. He was hardly out of the confinement occasioned by this severe accident, when the assassination of the President occurred, and he was called in as assistant-surgeon with special reference to microscopical and pathological examinations, of the kind for which he was famous. Although his was not the leading responsibility in the case, his attendance and labors were incessant, and his anxiety perhaps even greater than if his control had been complete.

After the President's death, Dr. Woodward was prostrated with great nervous depression and hypochondria, and was taken to Europe in the hope that rest and change of scene would restore him He returned after some months without having found the benefit hoped for, and it soon became necessary to place him in the asylum where he has now died.

Dr. Woodward was born in Philadelphia in 1832. After taking a collegiate course of study and the usual academic degrees, he graduated in medicine from the University of Pennsylvania in 1855. He practiced medicine and surgery in Philadelphia till the beginning of the late war, when he was made Assistant-Surgeon U. S. Army, and after some service in the field was assigned to duty in the Surgeon-General's office at Washington. His scientific attainments and philosophic breadth of mind were early recognised, and when the Army Medical Museum was established at Washington he was made the curator, and was also assigned to the work of writing the medical history of the war already referred to. The liberal policy which permitted the museum to be made an almost unrivalled collection of well-prepared and classified material for histological and pathological investigation, laid the basis also for the noble medical and surgical library equally pre-eminent for the scope of research it offers to the profound student. Of these, Dr. Woodward's talents and his tireless energy of labor made the fullest use. An expert microscopist from his earliest professional life, he now had at his disposal the best apparatus either continent could produce, and the finest lenses made in the old or the new world. The learning of past ages, the unlimited material gathered from army hospitals, and the choicest instruments for research were brought together under the control of a master-mind enthused with the zeal to make the utmost of their opportunity. It was a paradise for an original investigator—alas that the master of its secrets should have been cut off in his prime!

Dr. Woodward's great labor was, as his published works show, given to his professional investigations; but he early recognized it to be a duty to use the exceptional advantages at his command to assist in the perfection of the microscope, and in making known the relative value of improvements in all its parts—lenses, stands, accessories, methods of manipulation and illumination. This he regarded as extra work, in the nature of recreation from severer labors, holding it his duty to devote the full measure of the laboring hours of each day to the task for which legislative appropriations were specifically made, and giving to technical microscopy time eagerly taken from his hours of leisure and of rest.

Photography with the microscope offered brilliant promise of superseding all other modes of illustrating the work of the investigator, and he determined to explore all its capabilities and its limitations. He experimented with sunlight pure and sunlight made monochromatic by aid of the ammonio-sulphate cell. He tested the use of the calcium-light, the magnesium-light, and the electric-light for the same purpose. He worked upon photography of pathological objects and of diatoms, of gnat scales and podura scales, of natural and artificial ruled lines, and of micrographic writing. In each he far excelled what had then been accomplished, producing series after series of photographic negatives and prints which, by the common consent of the learned world, were declared unrivaled.

In the debate upon the aperture of object-glasses, his work and his testimony became of capital importance. His photographs of difficult tests with glasses, in turn, of Beck, Wales, Hartnach, Powell & Lealand, Tolles, Spencer, and Zeiss, were never appealed from as evidence of the performance of these lenses in the hands of an impartial expert. Nothing prettier or clearer in the way of crucial experiment has ever appeared than his demonstration, with aid of photography, that the claim made in 1876 of the performance of a Seibert lens in an alleged photographing of the striae of *Frustulia* *saxonica* was unfounded, the object having actually been a coarse *Navicula rhomboides*.

He was broad enough to be ever ready to recognise the value of improvements in the mechanical aids to investigation, and was as far as possible removed from the narrowness which finds its *Alpha* and *Omega* in the instruments and methods of the laboratory where one was educated. No one could better make the dexterity of his own fingers supplement the mechanical lack of inferior instruments; but no one, on the other hand, was quicker to see how an ingeniously devised accessory increased the ease and the certainty of delicate manipulation. He approved and made use of the elaborate microscopes of recent American and English manufacture, without forgetting that there are also uses for which the simplest apparatus is good enough. Whatever department of investigation or of *technique* he touched, it was done with the self-reliant judgment and firmness of a master-hand.

In his preparation of the text of the Medical History, his method was that of a true *savant*. No assertion was made without the fullest examination of authorities. A brief foot-note affirming a conclusion of fact has sometimes cost him days of conscientious collation of authors, so determined was he to accept nothing in the too common fashion of repeating the current *dicta* of the day. Of this sort was his running down and exploding the evidence which was once relied upon to prove the sub-nitrate of bismuth a dangerous drug. Of a similar kind was his tracing to wild notions inherited from the astrologers some stock dogmas as to the effect of common substances in medicine. It delighted him to rid medical science of inherited nonsense, and to aid in placing it upon the solid basis of sound induction.

To make sure of his data from the literature of his profession, he sought the meaning of authors in their own texts and not in excerpts or in translations. He refused to trust even his own tried assistants, but made himself familiar with the ancient and a wide range of modern languages in which his original authorities were found. When investigating a mooted point, his book-racks and the floor about his working table were piled with volumes in many tongues, and he did not rest till all that others of all ages had to tell was added to the fruits of most recent experiment made under his own eye. With such abilities as he possessed, and such methods of work as he adopted, it is safe to say that the appreciation of his scientific labors must grow with time. Cordial and admiring recognition has already been given him, and given most freely by those who are the severest judges of such work, both abroad and at home.

To microscopists, the forced interruption of his work for three years has been a cause for constant regret, and his death leaves a void it will be very hard to fill. The microscope room of the museum was a place which every investigator loved to visit, and Dr. Woodward's rare combination of zeal in original research with ardent desire to aid in the improvement of the instrument and its *technique*, made every microscopist at home there at once. It was an official center for experiment and test which was of inestimable advantage to the progress of microscopy; and the cabinet of apparatus and of lenses there collected, the shelves loaded with priceless negatives, and all the other evidences of his untiring and philosophic work, remain as speaking witnesses of the great loss we have suffered in the removal of him who was the soul and guiding intellect of the whole.